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*du Treil, Lundin & Rackley, Inc.*

A Subsidiary of A.D. Ring, P.A.

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December 12, 1997

DEC 15 1997

Via Federal Express

Mr. William F. Caton  
Secretary  
Federal Communications  
Commission  
1900 M. Street, NW  
Washington, DC 20054

Re: "In the Matter of Advanced  
Television Systems and Their  
Impact Upon the Existing  
Television Broadcast Service."  
MM Docket No. 87-268

Dear Mr. Caton:

Attached are the original and 11 copies of the  
Comments of du Treil, Lundin & Rackley, Inc. "In the Matter  
of Advanced Television Systems and Their Impact Upon the  
Existing Television Broadcast Service." MM Docket No. 87-  
268."

We would request that you kindly date stamp one copy  
as received by you and return it to us in the attached  
stamped, self-addressed envelope.

If there are questions concerning this filing please  
contact us at the number below.

Sincerely,

Louis R. du Treil, Sr.

enclosures

0510

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**du Treil, Lundin & Rackley, Inc.**

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**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, DC, 20054**

In the Matter of Advanced )  
Television Systems and Their )  
Impact upon the Existing )  
Television Broadcast Service )

MM Docket No. 87-268

Comments of the Firm of  
du Treil, Lundin & Rackley, Inc.

DEC 15 1997

These comments are submitted on behalf of the consulting engineering firm of du Treil, Lundin and Rackley, Inc. (dLR). This firm and its predecessors have been practicing consulting communications engineering before the Federal Communications Commission (FCC) for more than 50 years. The firm has participated in this proceeding and commends the FCC for a majority of the actions taken in the Report and Order (R&O).

The purpose of dLR's comments are to respond to the FCC's notice concerning modifications to the digital television (DTV) allotment table recently submitted by Maximum Service Television (MSTV), and a proposal to modify the UHF DTV permitted power levels recently submitted by the Association of Local Television Stations (ALTV).

dLR acknowledges and supports MSTV's concern for DTV-to-DTV adjacent channel interference which became apparent after the FCC conducted studies for the current DTV allotment table. The magnitude of the interference ratio difference between what was assumed previously and what now appears proper (i.e., 20 dB) must be considered. dLR has no other comments concerning the MSTV proposal.

ALTV's concern regarding the power differences between analog-VHF stations going to DTV-UHF as compared to analog-UHF going to

DTV-UHF is shared by **dLR**. However, before major modifications to the DTV procedures and rules are made, **dLR** believes the results from the numerous experimental DTV operations should be reviewed to determine what, if any, changes are appropriate.

ALTV proposes a plan to permit those UHF DTV assignments authorized an effective radiated power (ERP) less than 1000 kilowatts (kW) to operate with an ERP up to 1000 kW by using antenna beam tilt. The antenna's vertical beam will be tilted to a level where the ERP toward the radio horizon will reflect the FCC's DTV allotment ERP, but the ERP below the radio horizon will be greater, up to 1000 kW. ALTV claims that a station using this beam tilt method should be responsible for limiting additional "incremental visible" interference within its protected contour. ALTV alleges that additional "incremental visible" interference should not be caused to another station within the other station's designated market area (DMA). However, ALTV believes it should be permissible to cause additional "incremental visible" interference to another station if the interference is outside of the other station's DMA.

Current full service television interference calculations are based on the maximum ERP in a particular direction regardless of the antenna's beam tilt. This conservative assumption eliminates the need to consider the effects of tower and antenna plumb, and the antenna movements caused by wind. Prominent tower companies (Kline, Stainless, LDL) indicate typical tower deflections of 1 to 2% under normal loading and guying conditions. This equates to an antenna angular deflections of 0.57 to 1.1 degrees.

Figure 1 is included as an example of a vertical plane relative field pattern for a UHF antenna having typical gain. For this example, it is assumed that 0 degrees reflects the relative field (i.e., 0.224) to the radio horizon for a DTV station authorized an ERP of 50 kW (17 dBk) by the FCC. A maximum ERP of 1000 kW would occur 1.5 degrees below the horizon. We will ignore possible angular variations due to tower and antenna plumb. For a conservatively assumed tower loading deflection of up to 0.6 degree, the ERP in this example can vary from a low of approximately 14.5 kW (11.6 dBk) up to 410 kW (26 dBk). It is this potentially higher DTV ERP level (i.e., 9 dB in this case) at the radio horizon which can result in additional interference to pertinent analog and DTV operations. Furthermore, the higher ERP level at the radio horizon can result in an unwarranted extension of the station's service contour.

ALTV uses the term "incremental visible interference", and describes it as interference above and beyond that which would exist had the station operated with the DTV facilities authorized in the FCC's final Report and Order. **dLR** believes that this term must be defined on a technical basis rather than a subjective basis. In order for the FCC to manage processing of these types of requests, should it decide to do so, **dLR** believes theoretical calculations of interference should be used as the measured fields can be subject to substantial interpretation.

For stations using the proposed beam tilt method, ALTV recommends that actual field strength measurements and interference tests be taken by a registered professional engineering firm. The results are to be submitted to the FCC prior to program test authorization. ALTV proposes a similar process for interference complaint situations. **dLR** believes there are too many variables affecting television field strength measurements and interference tests, and that theoretical predictions should be employed. Interference calculations could be based on Longley-Rice or other suitable theoretical prediction method.

**dLR** recommends careful consideration of the potential adverse affects of the ALTV beam tilt plan.

Respectfully Submitted,

du Treil, Lundin & Rackley, Inc.

  
Louis R. du Treil, Sr.

  
John A. Lundin

  
Ronald D. Rackley

  
Louis Robert du Treil, Jr.

  
W. Jeffrey Reynolds

December 12, 1997

Figure 1



# ANDREW ELEVATION PATTERN

Type:

ATW30H6H

Directivity:

Numeric  
30.00dBd  
14.77

Main Lobe

Horizontal

1.30

1.13

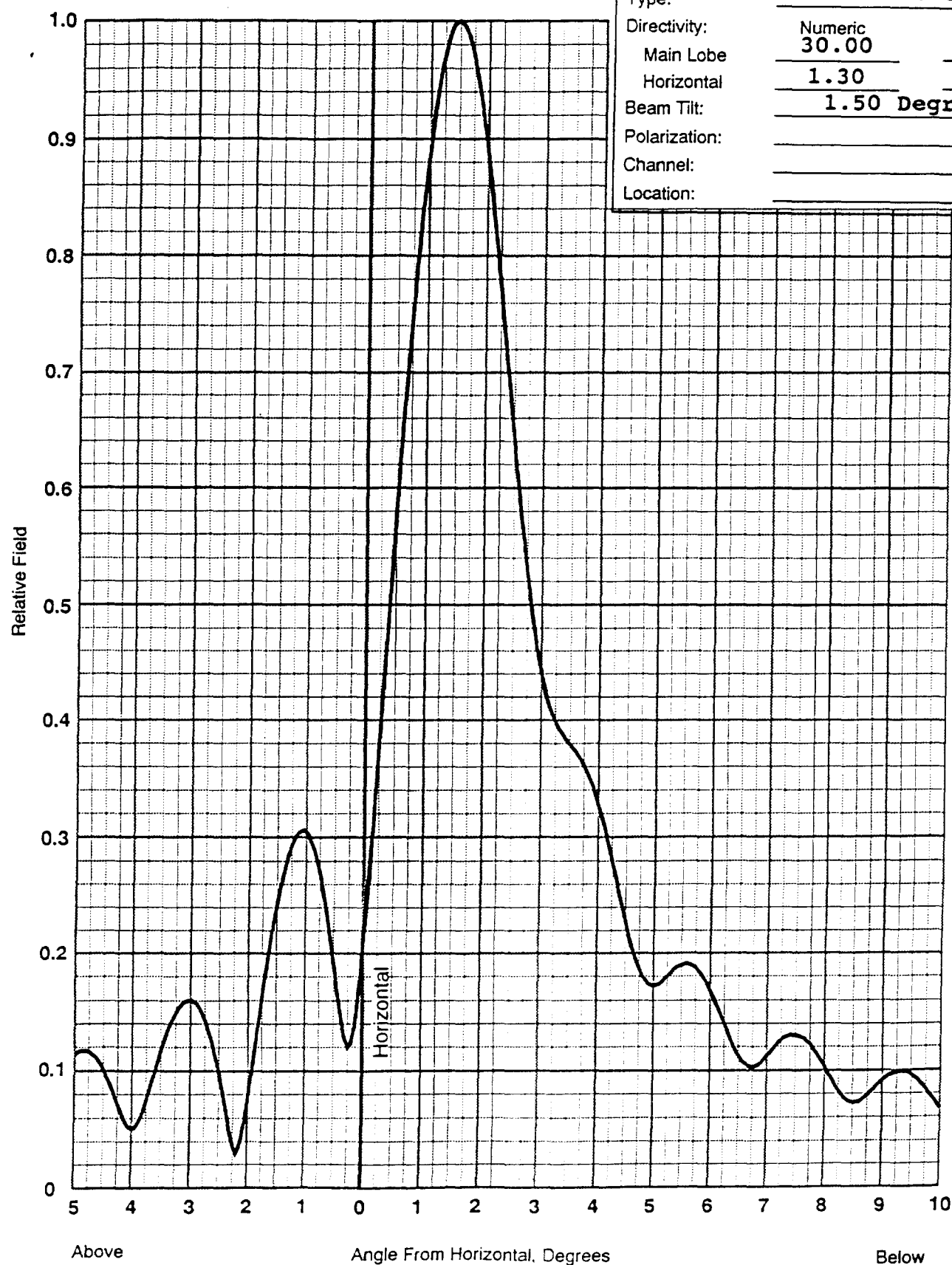
Beam Tilt:

1.50 Degrees

Polarization:

Channel:

Location:



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